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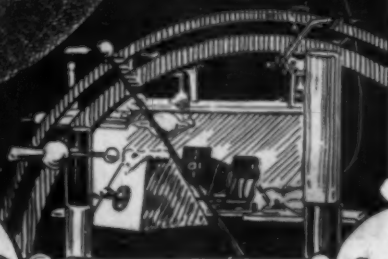
X-RAY JOURNAL

A MONTHLY

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NEW SCIENCE
AND TO THE
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THE AMERICAN X-RAY JOURNAL

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THE AMERICAN JOURNAL



G. BETTON MASSEY, M. D

THE AMERICAN X-RAY JOURNAL.

Devoted to Practical X-Ray Work and Allied Arts and Sciences.

VOL. XII.

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Indications for the Immediate Sterilization of Malignant Growths by Cataphoresis.

BY G. BETTON MASSEY, M. D., PHILADELPHIA.

The wide spread and almost phenomenal interest manifested in the treatment of malignant affections by Roentgen rays in the short time since its first suggestion has not been without its moral to the writer, who has labored steadily since 1895 to enlist expert attention to his operative method of immediate destruction of such growths and sterilization of contiguous parts by electro-chemical diffusion. It is evident that many have essayed radiation who have shrunk from mastering the electrical and surgical technique required in the employment of the major application of mercuric cataphoresis. It is, of course, true that the latter application usually demands full anesthesia, and this alone is enough to warrant a proper trial of a simpler remedy, and it is also happily true that many cures have resulted from the simpler remedy even tho its capacity for harm has been demonstrated. Meantime, many malignant growths have resisted intelligent applications of x-rays at times because of situation within cavities; at other times, probably, because of higher vital resistance of the particular germ involved and the patient, still free from metastasis, is daily subjected to the risk of internal implantation. It is in such cases particularly that the operator should turn to mercuric cataphoresis, for here we have a remedy that will insure the death of every living cell within the limits of the growth

in a period of time varying from a half hour to three hours, and that will, moreover, carry the sterilizing process into the tissues surrounding the growth to a distance of an inch, or more, and this bloodlessly and painlessly (when anesthesia is employed). The demonstrated dangers of operative infection of the edges when the knife is used are, of course, entirely absent from this equally quick method of eradication of an operable growth.

SUMMARY OF THE METHOD.

The patient, lying on a well-padded conducting plate of lead as large as the dorsal surface, placed on a rubber-covered spring cot, is brôt to full anesthesia; the large electrode is connected with the negative pole of the battery, and one or more tubular gold electrodes coated with mercury, or zinc electrodes coated with mercury, are connected with the positive pole of the battery and, one at a time, inserted into the growths. The current now being turned on gradually, a cataphoric diffusion of pure oxychlorid of mercury, or the mixed oxychlorides of mercury and zinc, takes place, the whole growth being progressively sterilized and necrosed by the diffusing chemicals. With a current of 500 to 1,000 milliamperes this process is so rapid that its progress can be actually seen, a growth the size of the breast being devitalized and softened in about two hours. As the lead-colored area of

necrosis extends to the whole of the apparent limits of the tumor, the latter becomes soft (and this is a particularly valuable index of completion of the process in growths within cavities), and the site of the subsequently formed line of demarcation is indicated by the edge of this lead-colored area. Beyond the area of necrosis, in which all elements are subsequently separated as a slough, a *zone of sterilization* of varying extent is produced, in which cancerous cells are devitalized with only irritation of normal structures. The process is bloodless, and the slough separates painlessly in from seven to twenty-one days.

This major application requires a battery of about 160 volts, capable of maintaining about 2 amperes for several hours, tho many cases require only a quarter of this current, or even less.

ADVANTAGES OF THIS METHOD OVER THE KNIFE.

It is bloodless, and hence capable of application in hemorrhagic situations; renders infection of the edges impossible as the latter are sealed before the current; the malignant cells are killed and an inch or more of possibly infected surrounding tissues sterilized; it is of easy application in certain cavities where knife extirpation is impossible; and a growth in an organ may be destroyed without destruction of the whole of the latter.

INDICATIONS FOR THE CATAPHORIC METHOD IN LIEU OF ROENTGEN RAYS.

This method is indicated as preferable to the x-rays in all considerable growths that are manifestly operable in the ordinary sense or in the wider sense made possible by this method, and where delay would place the patient in danger of metastasis; when accessible growths fail to yield to the x-rays; and when the growth is so situated within a cavity as to be beyond easy reach of radiance. As an effective

current may be carried to the spot by any well-insulated conductor it is particularly applicable to growths within the nasal chambers, mouth, throat, vagina or rectum.

DISADVANTAGES OF THE CATAPHORIC METHOD.

A recurrent growth of the chest, possibly extending within the ribs, is too extensive, usually, for successful eradication by the cataphoric method, particularly if the edges are ill defined. A deeply-penetrating growth in the neck with ill-defined edges is also unfavorable, the large current required being poorly borne in this situation and demanding that the pulse and respiration be closely watched. (In less vital portions of the body the strong current actually stimulates the pulse and respiration.) The disadvantages involved in the necessity for general anesthesia in the destruction of large growths has already been mentioned.

Dark Cathode Space.—WEHNELT.—(*Phys. Zeit.*, August 1; abstracted in *Lond. Elec.*, August 15) gives results of measurements of free electric charges in the dark cathode space. The greatest amount of free positive electricity is found immediately at the cathode and at the outward limit of the dark cathode space. Between these there is a space having a surplus of negative ions. The cathode is concentrically surrounded by electric charges of different signs, but the algebraic sum of the whole free charges is always positive. This surplus of positive ions varies as the pressure of the gas and as the current strength. Corresponding to the positive surplus in the gas is a negative charge on the cathode itself, whose discharge is facilitated by the ultraviolet light given out by the negative glow.—*Electrical World and Engineer*, Sept. 13, 1902.

Interesting Features in a Fatal Case of Cervical Cancer.

BY J. W. KING, M. D.,
BRADFORD, PA.

Mrs. B., of this city, consulted me in June, 1902, and on examination I found that she had an epithelioma of the cervix uteri, with the characteristic cauliflower excrescence. The slightest touch with the finger or the blade of the speculum caused severe hemorrhage. The odor, cachexia and hydorrhea were marked. Microscopic examination proved the disease to be cancer. In addition to this there were symptoms of chronic Bright's disease of a severe character. A microscopic examination of the urine showed the following record: sp. gr. 1.024, albumin, hyaline and medium granular casts. The patient had been a sufferer from Bright's disease for the past seven years, and was twice attended by Drs. Benninghoff and Nichols, of this city, for uremic convulsions, and twice tapped by them. The other organs were perfectly normal.

The patient could hardly come to the office, and had to be assisted in and out of a chair. The husband was informed of her serious condition and little or no hope was given him of her ultimate recovery. He was informed that in her present condition she could only live a few months unless treatment was instituted, and that treatment could only be by the x-ray, as an operation was out of the question on account of the condition of the kidneys.

In the course of the treatment two circumstances operated against its success. One of these was the instruction of her husband that the nature of the malady should not be made known to her; the other was the occurrence of severe x-ray burns on both thighs which obliged me to give up the x-ray treatment for a time.

In cancer, as well as in other grave diseases, patients ought to be fully informed of the nature of the disease so as

to secure their co-operation in the management of the case. When this is not done, many careless and indifferent acts inimical to them, and directly traceable to a supposed benefit or interest are allowed which would not be the case if they had full knowledge of their real condition. This practice of secrecy should be done away with and we should state frankly the truth to these patients. While information so imparted may have a depressing effect for the time, the primary shock is only transient, and reaction will come, and the patient will settle down with a grim determination to overcome the disease, and victory will often crown these efforts. This patient was told that nothing serious ailed her, only a little ulceration, which, of course, had to be doctored as it might lead to other diseases, and that it would take three or four months to cure her. Had she been informed of the true nature of the disease and that only patience and persistence in the treatment for a long period could effect a cure, she might have started with a firm resolution and so continued; but, as it was, she became careless and indifferent and the treatments, her only hope of recovery, were neglected.

The burns alluded to were very severe and were not entirely healed at the time of her death which occurred on the 28th of February, 1903. These burns were treated with various applications but none seemed of much benefit. There were hours when she was in comparative comfort, then again paroxysms of pain would occur which nearly crazed her. The burns were produced innocently on my part. I sent to the store for sheets of rubber but got a material called gasket, which looks very much like rubber. This material was used as a shield from the knees to the

inguinal region, and the tube brought as near to the vulva as possible. Around the speculum and parts not covered by the gasket, lead foil was used as a shield, and the parts other than the cervix were thot to be well protected from the x-rays. After the x-ray treatments the patient complained of pain in the thighs for which the usual treatment was ordered but without relief. The dermatitis was severe, progressing to the second stage, with deep-seated ulcerations and indurations. I now learned that the treatment prescribed for the burn in the first stage had not been carried out; which was, perhaps, the reason that she suffered so long a time from the burns. When she complained of pain from the treatment it was discontinued; this was from August 29th to October 17th; after this date it was renewed. The burns while severe, were not severe enough to make her cancel her social engagements, but were "awful" when I wanted her to come to me for treatment. After considerable parley the patient reported for treatment. I placed her in Sim's position and managed to give her a good treatment this time, and several more afterwards, but she got tired of the treatments, and complained on account of the pain, urging that we wait until the burns got better. These treatments were given thru an Allen shield. I did not see her again until a few days before Christmas, when it was suggested that I get a coil and treat her at her home. I went to New York, and other places to get a coil but could not get one to suit our current and so gave up in despair. On February 1st, however, a static machine was set up and a treatment given her. From this time treatments were given her every other day with excellent effect. The pains lessened, hemorrhage became more controllable and the outlook was more encouraging. She had been taking four grains of morphine a day but now the quantity was lessened to a grain and a half. Nausea and vomit-

ing, which was attributed to the morphia, continued. This condition was not due to the raying as she had this trouble during January, when not being treated.

The last treatment given her, February 26, was a very successful one. Up to this time I could not open the blades of the speculum as I desired but now I was able to fully expose the cervix.

The first treatment was given her on a table of our own construction which gave excellent service. The Allen shield gave me so much trouble that I had this table made and it answered every purpose. It consists of a table eighteen inches wide with an adjustable upright part and a horizontal extension; the portion necessary to protect the patient being covered with sheet lead, one-eighth inch thick. The upright part has an opening with a slide covered with sheet lead having a smaller opening.



In the accompanying illustration the heavily shaded part represents the lead covering; the opening in the upright part gives easy access to the vulva, while the lead slide has a small opening for the end of the speculum.

The upright can be lifted off the table and also admits of being raised or lowered as desired. It rests in a groove and is held in place by a nail. In giving treatments the patient lies on her back with the buttocks brought close to the upright part which is then adjusted to the size of the patient by moving it up or down, and her legs supported on top of the horizontal

extension. The speculum being introduced and the cervix exposed the slide is put in place and the x-rays applied.

By this device the x-ray tube can be brought close to the opening in the slide, allowing the anode to be brought within ten inches, or less, of the cervix, without danger of causing an x-ray burn.

This table, which is made of pine boards, cost me about \$5.00.

After applying the vaginal speculum the lead slide is adjusted so that the opening in it is opposite that in the speculum. The speculum rests against the slide. In order to protect the vaginal walls a rectal speculum is placed within the vaginal one. At first I used a tube made of sheet lead for this purpose.

The treatment of this case in detail is as follows. On June 18 I gave her a 30-minute exposure from a 12" Chromolume arc light, using 25 amperes, 110 volts, with an alternating current of 125 cycles. Each treatment was followed by a 30-minute static insulation, for its tonic effect, and especially to electrize the kidneys, as I had often found that this treatment had given excellent results in certain cases of Bright's disease. These treatments were also continued daily at the patient's home when circumstances made it necessary to do so. June 1st treatment the same. On the following day all odor had ceased. Daily treatments were continued and on June 30 a marked improvement was noted. From July 1 to 15 daily treatments were given and the Chromolume light was often employed for one hour. Long before this the patient could get on and off the operating table without help, walked about town with ease, attended picnics, and informed me that she never felt better in her life. A gain of ten pounds in weight was noted after the treatments had been continued one month. While the odor had ceased and there was improvement in other respects the ulceration did not diminish in any great de-

gree. I observed, however, to my great surprise, that on examining the urine at this stage of the case it was found to be free from the evidence of disease which the former analysis had shown. The x-rays were now used, as I no longer feared that this would set up mischief in the kidneys.

The first exposure was made July 16 lasting five minutes using a hard tube, with a current from a static machine of the Holtz type with twelve revolving plates (W. & B). The Chromolume light was also used with static insulation as before. She received three treatments with the x-rays during July, and daily treatments with the arc light. On the first of August a marked improvement was noticed in the cancer. The ulceration began to slough and healthy granulation appeared here and there. She had x-ray treatments on August 1, 5, 7, 9, 13, 17, 20, 22 and 25, after which the closest inspection failed to show anything left of the cancer, except a small area, no larger than a split pea midway of the external and internal os. On August 26 she complained of the dermatitis and the treatment directed for its relief, which was neglected.

The burns followed the first treatment after using the gasket, which I bought for rubber and was so informed at the time. Lead is heavy and often out of shape, and as rubber sheeting had been recommended, I was led to use it, and here I date the commencement of my trouble, and it was the actual cause of her death. The x-ray treatments did not kill her, but on account of the burns I could not follow up the treatment, relapses followed and the patient's condition became worse and worse. The treatments had to be discontinued for six weeks. Here too the ignorance of the patient as to her real condition allowed the disease to make fatal progress. She insisted on waiting till the burns healed. She would not come to the office for treatment but could have done so had she regarded herself as in any

danger. I was not at liberty to explain the nature of the disease to her, as her husband objected, and insisted that I wait a few weeks till she got a little better before treating her again. She left the city during November and was absent throughout December during which time she was able to have treatments but she preferred to wait. I explained that she might wait too long for treatments to be effective but she refused under any circumstances to have the treatments till she had recovered from the burns.

Where she was visiting she had a severe hemorrhage and took to her bed. At this time treatments were resumed. Her condition was most critical with severe hemorrhage at times, odor intense and the patient bed-ridden. She had to be carried from the bed to the table, but after each treatment marked results were noted. Two weeks before her death the mass began to slough, the odor lessened, the hemorrhage was slight and the kidneys normal. A day or two before her death she visited a neighbor, being carried there in a chair tho feeling strong. This I would not have allowed and the nurse tried to dissuade her but she was determined to go and stay a short time. She stayed two hours and showed considerable nervousness and fatigue as a result of the visit. On the following day she had a treatment and I never gave her a treatment so entirely satisfactory all around as this one and she seemed to enjoy it. This was at 5 o'clock P. M. On the following day at 5 o'clock P. M. she had a slight hemorrhage and a sinking spell, pulse 130, temperature 101. I regarded this condition as the reaction following the treatment, but instructed the nurse carefully on certain points and to report in the afternoon. The condition then seemed favorable, pulse 100, temperature normal. From this time till 3 o'clock P. M. she appeared to improve and said that she was feeling all right again. Not a minute

after this statement was made, she collapsed, pulse absent at the wrist, temperature 96. She remained unconscious three hours when she rallied but died a few minutes afterwards. The loss of blood was estimated at a gallon.

Thus ended an unfortunate case which under more favorable conditions might have given brilliant results. These were partly due to the patient, who being kept in ignorance of her condition, neglected the treatments which she might have borne notwithstanding the burns. My own responsibility in that I consented to treat her, on the insistence of her husband, without first informing her of the grave character of her disease; and also for the x-ray burns. I do not hold myself entirely responsible for the burns, as I bought what was represented to be rubber sheeting which actually contained but little rubber, and hence was insufficient as a protection against the powerful x-rays. On the other hand the case being of a year's standing a cure could not be promised; yet who can doubt, with the results of treatment before us, that brilliant results would have followed had this patient been under my roof from the start, and been treated as a patient should be treated under the circumstances.

I believe a great deal can be learned from this case and have reported it in detail. Even if our cases prove fatal we ought to publish them just the same as in that way we may learn more than if the favorable ones are alone presented.

Electrolysis from Stray Currents.—*Elek. Zeit.*, December 4. MOERK, in a long communication repeats his former proposal to prevent the dangerous results of electrolysis due to stray return currents from tramway systems, by reversing the direction of the current of the trolley system at periodical time intervals.—*Electrical World and Engineer*, January 10, 1903.

The Early Diagnosis of Pulmonary Tuberculosis by Roentgen Rays.

BY MIHRAN K. KASSABIAN, M. D.,

In charge of Roentgen Rays Laboratory and Instructor in Electro-Therapeutics in Medico-Chirurgical College and Hospital, Philadelphia; Chairman Medico-Legal Committee of American Roentgen Rays Society; Member of the New York Medico-Legal Society; Philadelphia County Medical Society; Pennsylvania State Medical Society; American Medical Association, Etc.

Briefly, the importance of the early diagnosis of pulmonary tuberculosis has been proved more than once by statistics from the various sanatoriums, in that when diagnosis has been made, treatment is at once instituted, resulting in either arresting the course of the disease, or better still, effecting a permanent cure, thus lowering the mortality rate nearly seventy-five per cent.

Unfortunately, the earliest diagnosis of pulmonary tuberculosis is often delayed or neglected for two main reasons—first, because the patient does not present himself early enough to the physician; second, because the physician who takes charge of the case is often misled by the symptoms, which are usually insidious and non-characteristic in onset. In fact in the majority of instances the patient does not claim to be sick enough to call a physician. The symptoms complained of are usually first those of general ill-health, altogether deceptive both to the patient and the physician. Furthermore, the patient may present himself stating the symptoms, and the physician in turn being negligent or perhaps unskilful, treats the supposed ill-health symptomatically, failing to discover by the usual methods of examination the true cause and nature of the disease. In many instances the patient is treated for a simple cold, a form of bronchitis, or some similar disease, while the true condition is overlooked and the tuberculous process allowed to progress to a fatal termination, or when at last its true nature is discovered, it is too late for remedial measures to do any good.

It is a difficult task to make an exact diagnosis of this disease, but still there are certain symptoms characteristic, more or less, of this condition; so much so that when such symptoms such as I will describe below make their appearance, it is advisable to investigate thoroly the causation, using, of course, all the means and methods of diagnosis at our command, including the x-rays.

The development is very insidious, with increasing dyspepsia and anemia, loss of appetite, distress after meals, and feeling of general lassitude and weakness, often misleading the patient and the physician for some time, until the occurrence of an irritable heart.

Cough—This is one of the essential features of pulmonary disease, though often slight, and even wanting. When present it is slight, dry and hacking, referred to the throat or stomach.

Expectoration—Is not necessarily characteristic of pulmonary tubercular disease in its incipency, but if there be any material expectorated a bacteriological examination should be made which will clinch the diagnosis, provided the characteristics causal bacillus be discovered. Often, however, this sign or symptom is absent.

Hemoptysis.—Hemorrhage from the lungs may be slight in amount, or on the other hand it may be copious and prove rapidly fatal, tho hemoptysis is rarely the direct cause of death in this disease. It is most apt to occur during the early stages, and usually it is the first clinical symptom which excites the suspicion of the patient.

History.—Hereditry here plays a most

important role and often furnishes the examining physician a clue to the exact nature of the disease. The personal history, however, surpasses in point of import the family history. Age, occupation, general health, race, and previous diseases as influenza, bronchitis, pleurisy, etc., are all predisposing etiological factors.

Temperature.—The presence of a slight rise in the temperature in the afternoon or evening, if associated with either local or general disturbance, should arouse strong suspicion, since it would be difficult to overestimate the diagnostic importance of this symptom. Trudeau believes that when any disturbance of the health exists and the evening temperature ranges above 99.5 F. there is almost surely tuberculous disease present in the system.

Pulse.—In the early stage of this disease some observers believe that the pulse rate is quickened, this symptom usually preceding the appearance of the bacilli in the sputum by weeks and even months.

Sputum Test.—This consists in examining microscopically the sputum for the detection of the bacillus of Koch. Off and on undoubted cases of pulmonary tuberculosis are discovered in which the test for the bacillus is negative, altho the non-discovery of the bacillus in the sputum is not evidence of the absence of pulmonary tubercular disease. It must be conceded that unless methods of diagnosing pulmonary tuberculosis other than the demonstration of the tubercle bacillus in the sputum be resorted to, not a small minority of cases would go unrecognized, some for many months, some for a year, and some, even, forever.

Tuberculin Test.—Our expectations of this have not been fulfilled as a diagnostic agent. The value of this agent has been espoused by some and by others condemned.

Physical Signs.—The most characteristic signs of an incipient or early stage of tuberculosis can be briefly summarized,

as follows: Defective expansion (often termed "lagging") as demonstrated by inspection and palpation, a localized increase or intensification of the tactile fremitus above the normal, enfeeblement of the normal vesicular murmur with prolongation and the elevation of the pitch of expiration. To these signs may be added the characteristic clicking rales, characteristic when present, often better brot out by coughing, and when present almost conclusive evidence of the presence of pulmonary tubercular disease. Percussion may reveal an impaired or deadened note, but this sign is quite unreliable in the earliest stage, becoming more diagnostic, however, as consolidation advances.

After we have exhausted all these methods, of examination and are still unable to reach a positive conclusion, we are exceedingly fortunate to have at our finger's end a diagnostic agent which is invaluable, as we can "see" wherein and how the diseased condition extends, namely the Roentgen rays.

Examination by means of X-rays.—

In order to make proper examinations of diseased lungs, it is necessary that the physician should be fully acquainted with the conditions of the normal lung. A certain amount of practice or experience and a thoro knowledge of the fluoroscopic picture of a normal chest are essential for the correct and successful use of the fluoroscope. There are two methods of examination, namely, fluoroscopic and skiagraphic. The fluoroscopic examination consists in placing the patient in front of the Crookes tube (twenty inches distant) and placing then the fluorescent screen over the chest of the patient. The clothing should have been removed previously over the entire chest, so that the sides may be compared with one another. The normal lung appears transparent. A diseased spot in the lung area appears hazy or clouded. The diaphragm on the

affected side is somewhat lagging or impaired in its movements up and down during the acts of inspiration and expiration. The lung should be viewed with the fluoroscope at the end of the deepest inspiration and expiration possible, in order to determine any diseased areas, anteriorly first and then posteriorly, and lastly the two viewfields should be compared with each other.

Skiagraphic examination refers to the keeping of the shadow, permanently, on sensitive photographic plates.

As to the relative value of the fluoroscopic and skiagraphic examination, during my experience in the hospital and in my private laboratory, I have been able to show more detail by skiagraphic examination than by fluoroscopic examination. I prefer the skiagraphic method for the simple reason that the time of exposure is very short—10 to 20 seconds. During this time the patient is requested to remain absolutely quiet, stopping all respiratory movement by keeping the mouth wide open. The full details of technique are described in my text-book on the "Roentgen Ray," which is in press. To show the value of x-rays in incipient stages of tuberculosis, I desire to call your attention to the cases of Dr. J. M. Anders, professor of medicine, *Medico-Chirurgical College*, of Philadelphia, which cases I had the pleasure of studying with him.

CASE 1.—S. H., female, married, age 28 years, cigarmaker, first applied at the outpatient clinic of the *Medico-Chirurgical Hospital*, June 6, 1899, for treatment. A brother died of acute phthisis. Patient had had some childish disease, but later in life nothing worthy of comment until the outset of the disease for which she sought medical advice. Her illness began with paroxysmal pains in precordia, and this lasted for a considerable period of time. The day previous to her visit, she had expectorated blood, which she states was "coughed up;" quantity of blood was

small, bright red and frothy. The abnormal physical signs were impairment of percussion note and harsh breathing, with prolonged, high-pitched expiration at right apex; and lack of vesicular quality of the breath sounds, with prolonged, high-pitched expiration at left apex; all signs, however, were less marked than at right apex. Microscopic examination of the sputum gave a negative result. Later an x-ray examination showed an abnormal shadow or marked haziness at apex of both lungs, more marked at right, i. e., the apex which showed the abnormal signs the more pronounced. (See Fig. 1.)

CASE 2.—P. K., age 29 years, cigarmaker, applied for treatment at outpatient clinic, November 10, 1899. The family history is entirely negative as to pulmonary tuberculosis. Patient escaped childish diseases; he had had typhoid fever one and a half years previously, confining him to bed for ten weeks. Since then has been complaining of persistent gastric disturbance, as evidenced by eructations of gas and dull pains in the epigastrium after meals; there has been some dyspnea on exertion and cardiac palpitation at intervals. A few days prior to his first visit, patient began to expectorate bright red blood; this was still present. Subsequently there was neither cough nor expectoration. The amount of blood lost did not exceed half an ounce. An examination of the throat and larynx gave a negative result, and the same was true of a physical examination of the thorax, altho the chest was of the phthisical type. After excluding all the causes of hemoptysis except pulmonary tuberculosis, an x-ray picture was made by Dr. Kassabian. This showed commencing consolidation over circumscribed areas on both sides just below the apices. (See Fig. 2.)

CASE 3.—J. O., age 14 years, errand boy, was admitted to the wards of the *Medico-Chirurgical Hospital*, November 13, 1899. Father died, aged 52 years, of



CASE 1.



CASE 2.

heart and lung disease, the precise nature of which the patient does not know. One sister is in delicate health. The lad had had the usual diseases of childhood and a severe illness of unknown character a few years since; had always been in delicate health. The present illness began about four weeks before he fell under my observation. The first symptoms complained of were malaise, headache, a slight cough in the evenings and mornings; more or less abdominal pain associated with slight diarrhea. The evening temperature on admission was on the average about 100 F., but abdominal pain, diarrhea and cough had largely subsided.

Physical examination showed a phthisical thorax, without any other abnormal physical signs. After excluding typhoid fever, latent tuberculosis was suspected, and tuberculin was injected; this was followed by a positive reaction. An x-ray examination was also made by Dr. Kassabian and showed a slight haziness below the left clavicle. (Cuts by courtesy of *Jour. Am. Med. Association.*)

The value of x-rays examination is understood by leading physicians in this country and Europe, and is in daily use by the majority of the phthisiologists, both in private and sanatoria and hospital practice.

The Relationship of Psychic Suggestion to Electro-Therapeutics.*

BY MAURICE FIESCHOR PILGRIM, A. B., PH.

D., M. D., BOSTON, MASS.

Vice-President of the American Electro-Therapeutic Association.

At the threshold of this brief discussion, I would like those who compliment me with their attention, to distinctly understand that I am not in sympathy, either wholly or partially, with the popular movements of the present time, crusading under the various names of "Christian Science," "Mental Science," "Magnetic Healing," and the like. On the contrary, considered as *exclusive* systems of healing or caring for the sick, they should only be mentioned to be condemned. In order to justify the founding of a system upon any truth, the claim of which is its exclusiveness, it must be composite; not fragmentary; otherwise it is a menace to the safety of the individual and the community. Human life is too precious to be remanded to the care of those who, ignorant of the construction of the human body and of the laws under which it

functionates, deny its existence and are unable to recognize its deviations from physiological function or changes in its structure. Nevertheless, from the point of view of ultimate results, there is very much that has happened under all these alleged systems of healing that might well and properly challenge the serious attention and careful investigation of the profession to which we belong. Is it not generally true that every great popular error has contained some germs of important truth? May not that be true in respect to those healing crazes which have been and still are sweeping over the country. There can be no more bitter error, it seems to me, than continued depreciation or denial of patent facts. The fact that the alleged cause does not appear to equal the observed effects, is not, to my mind, a valid excuse for ignoring palpable results.

To deny that scores of sick people—many of them unsuccessfully treated by

* Read at the meeting of the American Electro-Therapeutic Association at the Hotel Kaaterskill, Catskill Mts., New York, September 4, 1902.

those bearing the degree of our profession and abandoned to die—have gotten well under these alleged systems of healing, is almost as great an error as to believe the absurd propositions exploited as conditions-precedent upon which they insist that the cures are necessarily based. Had we better not proceed to investigate with a view of discovering a rational, a scientific explanation of manifest results rather than to continue the puerile and illogical course of doggedly denying them? Would not such procedure better comport with the traditions of an expanding and progressive profession? Besides, it is well to remember that our denials have accomplished little or nothing. They have utterly failed to stem the rising tide; on the contrary, it is greatly to be feared that they may have contributed to swell the current that has been setting in the wrong direction. At all events, "Eddyism" has steadily grown in popular favor and acceptance for the past thirty years. It now embraces two millions of adherents between the Atlantic and Pacific oceans. It has invaded Great Britain, crossed over into Germany, and is spreading over the European continent. And this has occurred, let us remember, while we as a profession have been persistently declaring that there is nothing meritorious in these metaphysical systems of healing,—that no one actually sick was ever cured under them. While we have been thus declaring, many of the converts to these fallacious systems were our patients, of whose cure by the means at our command we despaired, and whom we abandoned to what we sincerely but regretfully believed was speedy and inevitable death. We have seen them get well under these delusional systems of healing. Why did they get well? How were the cures brought about? What were the effective causes—for there must have been a cause or a series of them—of these unexpected recoveries?

Do we quite know, or have we, as a profession, really cared enough about it to try and find out? It is to be feared that our attitude has been that of standing disdainfully aloof in the presence of these interesting happenings. Is there not an ultra-conservatism as deadly to all progress as ultra-radicalism is to safety? Might we not have rendered these alleged systems of healing well nigh clientless had we been disposed to investigate, discover, and appropriate whatever of merit they possessed, instead of exhausting our energies in sneers, denials, and ridicule? Truth lies usually between the extremes. Dare we assert that while these so-called systems of metaphysical healing have hidden whatever virtue they possess under a grotesque maze of transcendentalism, we as a profession have not plunged deeper into the mire and bogs of abject materialism? While lost in our contemplations of the creature, have we not forgotten the Creator? Have we not accorded to mere matter too much consequence and force, and unconsciously permitted it to set narrow limitations and bounds to our activities and usefulness which fuller scientific investigation would have sanctioned? Have we not complimented matter with too much of our thought and life until it has throttled us in its tyrannous embrace and extinguished the "inner light?" It seems to me that the trend of so-called medical progress of more recent times has been strongly in the direction of intense materialism. Nevertheless, there is no attempt at denial upon the part of reasonable persons that the impossible of to-day is constantly becoming the realized possibility and accepted fact of to-morrow. Are the "Roentgen x-ray" really curing cancer? Some of us remember how chimerical the idea was regarded when first suggested, and by some electro-therapists, too. Time and opportunity have, however, shown that the idea did not or-

iginate "in a brain intoxicated with a superabundance of electrical enthusiasm." as a respectable writer of not long ago alleged. The quotation here given is his. What would he probably say to-day upon this subject?

For the purpose of bringing this subject to your attention in as concrete form as possible, and with no intention at this time of considering them in detail or in their order of arrangement, the following postulates are submitted:

I. Psychic suggestions made for therapeutical purposes, are physical stimuli initiated in, and sent from, the operator, which evoke in the patient the kinetic energy called *vis medicatrix naturae*.

II. Psychic suggestion, in many if not in all cases will, if properly employed, materially aid and supplement other forms of treatment directed to the relief and cure of diseased conditions of the human body.

III. A large proportion (if not an actual majority) of physicians now recognize, theoretically, the potency and value of this agent, and many of them are successfully using psychic suggestion in conjunction with other methods of treatment.

IV. This force, whether consciously recognized or not, has been an important factor, to a greater or less degree, in all systems of therapeutics. Like electricity, it has been an ever present, though, for the most part, an unrecognized and unutilized force; and is as ancient as the universe which it permeates and of which it constitutes an important part. It is only our beginning recognition of it as a potentiality that is really new.

V. All the conceded curative results which have followed the application of modern fads—"Christian" and "Mental Science," etc., etc., to disease of the human body, are due wholly to the unwitting employment of psychic force with occasional success, and not at all to any

merit inherent in or peculiar to these alleged systems as such.

VI. This force can be made to serve our purpose more effectively when it is recognized, correctly estimated, and intelligently directed, thus removing or greatly minimizing the dangers which now attend its employment as an exclusive system of healing by those ignorant of the law under which it operates, and of the construction and physiology of the human body, and the morbid conditions which may affect it.

VII. It is the duty of the profession of medicine, while safeguarding the health and life of the community, to protect as far as possible the public against the baneful results of its own follies. This can be best accomplished by physicians utilizing in their own practice whatever of merit may reside in these so-called systems of healing, thus robbing charlatany of its clientele and vocation.

VIII. Psychic force bears a close relationship, in many respects, to electric energy, and can be more advantageously combined with, and utilized in, electrotherapeutics than in any other department of practice. The methods of the electrotherapeutist are such as to make the employment of psychic suggestion easily available without discussion, or antagonizing the beliefs or prepossessions of the patient. The residual benefits inure not alone to the patient, but by enlarging its sphere of curative possibilities, to electrotherapeutics as well.

We speak of power, of force, and generally as though it resided wholly in matter. That it does to a considerable extent, it would seem that no really sane person would seriously attempt to challenge. But does all power reside there? Does it originate there? These, it seems to me, are basic questions which it becomes important to correctly determine.

It is a difficult task for anyone to attempt to define what power really is. It

certainly is not matter, though it works through matter, and thus manifests itself to our consciousness. But our conscious recognition of an effect is not power. Water is not power, nor is steam, nor wind, nor electricity, but power works through them all. What is electricity—that subtle, mysterious something that we electro-theraputists are daily employing in our work? We have our hypotheses as to how the electric current when applied to the human body effects certain nutritional and structural changes—and we believe they are reasonable hypotheses—but dare we assert, unqualifiedly, that they are anything more than that? Could we demonstrate it even if we cared to make the positive assertion?

It seems to me that no perfectly balanced person will seriously deny that drugs and electricity do have an effect upon organisms—effects *per se*, inherent in the agents themselves regardless of the conditions under which they are administered or the personality through which their exhibition takes place. We do not always know their *modus operandi* and must frequently be content to recognize their effects empirically. Many of the valuable things in medical procedure and therapeutics came to us empirically at first. In some instances, their rationale was subsequently discovered; in others, it has never been satisfactorily explained. Nevertheless, we as a profession have not felt justified in rejecting a meritorious agent simply because the rationale of its action was not immediately and fully disclosed. Therefore, let me inquire if it is logical to assume after we have prescribed the indicated drug or administered the current of what we deem the proper voltage and amperage, and otherwise done all that our experience (and that of our colleagues, too, perhaps) dictates, that that is the limitation of all power? What right have we to assume that Infinite Wisdom has no other channels through which

to reach humanity with its beneficent bestowals than through the *material side* of the profession of medicine?

Why should we assume that we have a permanent and perpetual pre-emption, *through our material methods and agents*, on all the revelations concerning the human body, and the laws governing its welfare, which a beneficent Creator may see fit to give to the world? To make such an assumption is, to my mind, as inconsistent and arrogant as are the contentions of the rankest Christian Scientist in denying to drugs or electricity a resident force and in absurdly insisting that all the power they possess is due solely to the accumulated thought of all the centuries which has been focused upon them!

As electro-theraputists, our central aim and concern is, of course, the restoration of health to those temporarily deprived of it—to conserve and prolong life. How do we hope and expect to accomplish this beneficent purpose? Let us consider, for a moment, what sickness and health really mean, and how these opposite conditions are related the one to the other.

Being sick and getting well consist of certain bodily states and changes in contrast with another common condition called "health." It is one of the cardinal dogmas of biology that the structure of every living being is passing through a continuous transformation during the whole term of its existence; that each particular change which befalls it, whether healthful or morbid, is part and parcel of one unified corporeal history. Applying the logic of this broad doctrine, all diseases are included in this experience as phases of the cosmic process called evolution—temporary disturbances in the stream of continuous change by which the life of to-day hastens to become the larger life of to-morrow. In supporting this view, Dr. Bernheim asserts that "diseases are cured, when they are cured, by their own natural biological evolution.

Ordinary therapeutical methods consist in putting the organism in a condition so that *restitutio ad integrum* may take place. We suppress pain, we modify function, we let the organ rest, we reduce fever, we retard the pulse, we induce sleep, we encourage secretion and excretion, and by thus acting, we allow Nature, the healer, to accomplish her work." These words of the eminent French writer and physician are not the emanations of a mere psychologist. Nor was he writing as such, but as a physician. As a physician he would not be likely to underrate his own profession or credit Nature with more than her due. But he plainly intimates that the real healer is the native power within the patient. The physician and his drugs or electricity are only ancillary. They are servants who exercise their skill to clear the path of Nature to enable her the more perfectly to do her work. Having done his part, the physician must leave it to Nature to evolve health by means of biological changes which are ever going on in the system.

This recuperative action, which all physicians now recognize, is centralized under another name. It is well known that all living structure, animal or vegetable, possesses this instinctive power of self-recovery. It is a form of spontaneous, plastic energy which, acting through the proper neural channels, resists disease, tends to arrest its progress, repairs the damage done, and compensates the bodily losses sustained. This inherent tendency of the sick to get well or of disease toward recovery, we know as *vis medicatrix naturae*. The common people of the laity say it is Nature. The reverent call it the spirit of God. Dr. J. Mitchell Bruce, of Charing Cross Hospital, London, while reviewing the progress of medicine, recently said: "We are now able to appreciate, as never before, the constructive factor which takes the form of repair and convalescence. Just as the body

possesses provisions for resisting the causes of disease, so it possesses provisions for arresting its beginnings . . . quite spontaneously; that is, without the help of either the surgeon or the physician." Elsewhere in the same address, he refers to this natural faculty as a recuperative factor making "spontaneous attempts at recovery."

The intelligent employment of remedial means, as drugs or electricity, is directed to reach and evoke in the patient the inherent faculty of self-help—this is *vis medicatrix*—just when and where it is needed. The essential meaning of all therapeutics, as it seems to me, is to summon and concentrate this inherent remedial force on the obstacle to be overcome. The locomotive engineer soon learns how many pounds of steam are required to keep his train moving at a given rate of speed along a level track; but, when there is a grade to be climbed, the pressure on the driving wheels must be increased or the train will "slow up." In some such analogous way the vital energy of the body may be regarded. A stream of given dynamic vitality is adequate to supply the human organism in health; but morbid conditions increase resistance which nature must overcome with a stream of greater intensity directed to the seat of the obstruction. This is precisely what takes place in the organism in cases of special need. When unusual demands are made upon the digestive organs, for instance, or the brain, an increased supply of blood is sent to those overtaxed structures. If there is not, the overwrought organ suffers, and disease ensues. When the flesh has been injured, Nature at once sets up a special process of healing by means of inflammation. The blood is thus made to flow faster towards the injured parts, the blood vessels dilate, corpuscles and fluids transude carrying the material to form the plasma from which the hurt is repaired. (To be continued.)

Chicago Electro-Medical Society.

The 20th regular meeting of the Chicago Electro-Medical Society was held in the drill hall parlor, Masonic Temple, March 30th, and called to order by the

president at 9 o'clock p. m. Minutes of the previous meeting were read and approved.

The following paper was then read:

Experiments in X-Ray Therapy in 1896.

BY H. PRESTON PRATT, M. D.,
CHICAGO, ILL.

It is my purpose this evening to give a brief resume of my work in the field of x-ray therapy covering a personal experience beginning seven years ago.

My first experience with the physics of the x-ray commenced on Friday, the 7th day of February, 1896. Reports of my work during the months of February, March and April, were published in most of the daily papers, some electrical journals, one medical journal, and in some of the scientific periodicals. All of the experiments in this line of work were conducted under the auspices of Bennett Medical College. The Chicago Medical Times of March, 1896, was the first medical journal, as far as I am aware, to publish any of our experimental work.

On April 5, 1896, we exposed to the x-ray for one, two and three hours, respectively, three sets of cultures in tubes of the following bacilli: cholera, diphtheria, influenza, glanders, pneumonia, typhoid, tuberculosis, and anthrax. Several of the bacilli cultures were killed in one hour's exposure, and all by three hours' exposure (Chicago Times-Herald, April 13th, 17th, and 18th; Chicago Tribune, April 14th, 1896). On April 13th, 1896, we treated two patients who had cancer of the stomach, who were immediately benefited by the exposure of one hour each (Chicago Tribune, April 14th, 1896).

These two cases were also reported by Dr. J. E. Gilman in the Clinique of Jan. 15th, 1901; also reported by myself in an article read before the Roentgen Ray Society of America at Buffalo on September 11, 1901, and published in THE AMERICAN X-RAY JOURNAL of April, 1902, from which I quote the following:

"The most notable effects at that time were the relief of pain and the checking of the hemorrhages."

The following quotation also appeared in relation to the same cases:

"We did not expect marvelous results, in fact we did not know what to expect. We treated them daily for over four weeks and were surprised to find how quickly the x-ray relieved them of pain."

These patients came to me without the knowledge of their physicians, who, upon consultation, advised immediate operation. It was almost impossible, at that time, to secure other patients suffering from cancer; for every surgeon advised an operation as giving the only possible hope of relief. It was not until later in the year, that I managed to treat a few private patients who refused to be operated upon, and were referred to me by their own family physician (who was not a surgeon). On April 15, 1896, Prof. Roentgen himself, in a cablegram to the New York Journal, says as follows:

"Your dispatch tells me diphtheria was

slain outright in the Chicago experiments, while no final and positive verdict is as yet given as to the effect on the bacilli of cholera, pneumonia, typhoid, and other plague germs tested. This is astonishing and partly disappoints my anticipation. I consider diphtheria and cholera the most deadly of plagues and believed positively that the bacilli of the other scourges would be the least difficult to kill. But I am confident that eventually the x-ray will prove an effectual cure for all such diseases. I will rejoice when it will be in the power of every competent physician to kill those bacilli. Then once having located them, the modus of annihilation will be mere technicality. If Professors Pratt and Wightman have successfully completed their experiments, their names should go down to posterity as benefactors of the race, since humanity is immeasurably benefited by their work."

Guinea pigs were inoculated, April 18th, with tubercular bacilli (Times-Herald, April 19th, 1896) and exposed to the x-ray one hour daily. Those thus treated lived, tho with x-ray burns; the others all died of tuberculosis.

The reports of these experiments were offered to the Journal of the American Medical Association, as well as to other medical journals in Chicago, for publication. This included the Homeopathic as well as the Eclectic, and all refused to publish the report because they thought it was premature and our deductions might be wrong. The Chicago Medical Times published the first report in March, 1896, and hesitated about publishing any further report until corroborative evidence should come from various parts of the country. Dr. John B. Hamilton, the editor of the Journal of the American Medical Association, said that as soon as my reports were corroborated by other investigators he would be very glad to give me space in the journal; until then he did

not wish to publish them. However at the time of his death I was preparing a report of my work at his request for publication. In the meantime I was continuing my experiments and treating patients with the x-ray.

About this time there were four typical cases referred to me to be treated with the x-ray, suffering from tuberculosis in one form or another. The first case treated was Mrs. J. B. She had the following history: Age 37, German-American, mother died of Bright's disease at forty-two, father of pneumonia at sixty, has three brothers, all healthy, was a healthy child, menses at fourteen, no trouble at that time, married at twenty-five, first child at thirty, no miscarriages, first child died when three years old of typhoid fever, the second, born at the seventh month, died the second day after birth. She had bronchitis and expectorated blood, with slight aphonia and hoarseness, a year ago; since that time she has grown weak, lost flesh, sputum yellowish, greenish, gray and lumpy, with a fetid odor, appetite poor, sleep interrupted by persistent coughing, menses regular, had a rise in temperature every afternoon. When examined the temperature was 100, pulse 100, respiration 36, breathing shallow, right lung consolidated at apex, and had a cavity; this was the first exposure, which was for one hour. The patient had a continual soreness in the chest, shortness of breath, and a persistent cough. This patient's sputum was examined at the Columbus Laboratory by Dr. William Harsha. A physical examination was made the same day by Dr. William Harsha and Dr. George F. Hawley, who made the following written report:

"Chicago, May 25th, 1896. Mrs. J. B., aged 37, said to have lost about twenty-five pounds in weight, temperature 100.3°, pulse 96, bronchial rales, tubercular bacilli in sputum in moderate numbers.

William Harsha, M. D., George F. Hawley, M. D."

The sputum was also examined by Dr. Finley Ellingwood and Dr. Hugo Wightman and both found the bacilli of tuberculosis in it. They gave a very unfavorable prognosis. She was also examined by Dr. J. E. Gilman. We treated her for about four months, after which Dr. Harsha made the following report:

"Chicago, November 14th, 1896. Examination of the sputum in the case of Mrs. J. B. shows the presence of tubercular bacilli in moderate numbers, there is a decrease in number since the examination three or four months since, clinical appearance is improved also. William Harsha, M. D."

The patient was discharged for the time being, owing to the fact that she was suffering from auto-intoxication. She was advised by us to discontinue treatment until she recovered from this condition which, at the time, we thought was due to too much raying. Later developments demonstrated the correctness of our deductions. We advised her to increase elimination by using saline cathartics, and to build herself up with ozonized preparations, cod-liver oil, maltine, etc., and especially such tonics as would be acceptable to the stomach. We advised her to leave the city, and to go west or south, but, to my surprise, about a week ago she presented herself at my office for examination, and stated that she had not been out of the city. She said that she had followed our advice as to remedies, and now felt well.

I learned from Mrs. B. that in 1898, she had another healthy child which died at birth from mechanical injury. Dr. Harsha and Dr. Hawley examined this patient today, March 30, 1903, with the following written statement:

"I have this day examined Mrs. B. and find her improved in every way. Weight

now 155, pulse 76, respiration 20, no rales in lungs. This patient was examined May 25, 1896, and tubercular bacilli found. William Harsha, M. D."

The next certificate is from Dr. Hawley.

"I examined Mrs. B. today, March 30, 1903, seven years from the first examination, and found her much improved. I could discover no active trouble present. George F. Hawley, M. D."

I have this day taken an x-ray picture which you see before you to-night.

This case, and other cases, were reported by Dr. Finley Ellingwood (*Chicago Medical Times* of July, 1896). I will now give a list of typical cases in brief, treated by me with the x-ray, suffering from various disorders.

On April 17th, 1896, we treated a Mr. T. for a mitral lesion of rheumatic origin. He received daily treatments of one hour each for eight days and left us very much benefited. The murmur had changed in character considerably showing the marked effect the ray had on the disease.

On April 19th, 1896, we treated the second tubercular patient, who was suffering from laryngeal and pulmonary tuberculosis. This patient was examined by Dr. E. Fletcher Ingals, in the interest of the *New York Journal*, and a complete daily record of the case appeared in the *Journal* April 20th, 1896, giving the pulse, temperature and respiration, and changes that took place while under treatment.

This patient was exposed to the x-ray one hour each day for over a week, when business called him away from the city; he took cold and, as we understood, had an attack of pneumonia from which, after lingering for a time, he died.

On May 7th, 1896, Dr. Robert Sterrett, of this city, referred a Mrs. M. S. to me suffering from enlarged joints due to rheumatism. She improved very much

under the treatment, so much that the doctor commented on such excellent results.

On May 12th, 1896, we treated a Mr. J. J. C. He was suffering from interstitial nephritis. He was treated for about three months with the x-ray, alternating with the static current, after which time he went west and is still alive and enjoying apparently good health.

On May 13th, 1896, a Miss E. P., suffering from curvature of the spine, which we supposed to be tubercular, was put under treatment. The diagnosis was questioned at the time. At any rate she improved very much under the treatment. After a period of two months she discontinued. The x-ray seemed to have relieved her of pain and rendered the diseased portion free from tenderness or soreness.

On May 18th, 1896, we treated a Miss M., who was suffering from acne. She had a slight growth of hair on her upper lip, which was also destroyed by the x-ray. She was treated for three months and the acne cured. The hairs have not yet returned.

On May 20th, 1896, the third typical tubercular case was treated by us. This case was referred to us by Drs. Francis Dickinson and Effie Lobdell, of Harvey Medical College. This patient was examined by Dr. William Harsha, Dr. Geo. F. Hawley, Dr. J. C. Spray, Dr. J. E. Gilman, Dr. M. F. Sterling, Dr. Finley Ellingwood, and others. The sputum was examined at the Columbus Laboratory. The record of this case, as well as that of Mrs. B., was published in the Chicago Medical Times of July and September, 1896. The record of temperature, pulse and respiration, etc., of Mrs. B.'s ran about the same as that of Andrew G.'s. Mrs. B.'s daily changes were not published but Andrew G.'s were published in the Chicago Medical Times of July, 1896;

and also was reported by Dr. J. E. Gilman in the Clinique of July, 1897. I also reported these cases before the Roentgen Ray Society at the Buffalo meeting in September, 1901. The full report of which was published in THE AMERICAN X-RAY JOURNAL of April, 1902. In the above three cases already cited the following changes were noticed: (1) The x-ray had a profound effect on the system acting as a sedative. (2) It brot about an increased elimination of effete matter, as demonstrated by the analysis of the urine, as well as by the odor of the breath, showing chemical changes. (3) Thru ionic changes it acted as a germicide. The two following facts were noted by Dr. Finley Ellingwood in the Chicago Medical Times of July, 1896, that there was always an increase in the secretion of urine in quantity as to both weight and solids, and there was an active exhalation of hydrogen sulphide with the breath after the first half hour of treatment.

On may 26th, 1896, a Mr. S. was treated by us for a hypertrophied liver. We used the x-ray in connection with the galvanic current. In two months he was discharged much improved. At that time there were symptoms of gall stones and he had frequent attacks of biliary colic. He has not had an attack since.

In the seven years that have elapsed since I began to use the x-ray this fact has been noted in a number of cases of this character which have come under my observation, that there is a complete cessation of pain after the treatment, especially if there was present a catarrhal condition of the gall ducts.

On June 8th, 1896, Dr. J. B. Murphy referred to me for treatment with the x-ray, a Mrs. J., suffering from lupus, with the following letter:

"Dear Dr. Pratt: This will introduce to you Mrs. J. She has a local tuberculosis from an infection following vaccina-

tion. This is a good case for the x-ray. Yours truly, J. B. Murphy."

This patient was treated for two months when she was discharged cured. There has been no recurrence up to the present date.

On June 18th, 1896, a Mr. A. H. D. was referred to us for treatment to see what the x-ray would do in atrophy of the optic nerve. He was under our treatment for about thirty days. He could begin to see a little light, and could distinguish a shadow. Owing to family disagreements he went home and committed suicide.

Mr. W. was the first case referred to me by Dr. J. E. Gilman. He had suffered from asthma for some time. He had daily treatments of an hour each for thirty days. At the expiration of the time he went south and entirely recovered his health. He has not had an attack since the x-ray treatments began, now about seven years.

On June 25th, 1896, a Mr. D. was referred to us for treatment with the x-ray for cancer of the walls of the bladder. We treated him about two months after which he went home and died later. His death was due to general infection.

On June 25th, 1896, a Mr. H. was treated by us with the x-ray for psoriasis. At the end of two months he was much improved.

On June 26th, 1896, V. V., an Italian, was referred to us for treatment with the x-ray for cancer of the stomach. We treated him for about two months daily with the x-ray for an hour at a time. He picked up and felt decidedly better. He decided to go home to Italy to see his father's family, and while there he was induced to be operated on, and died from the effects of the operation.

On June 30th, 1896, a Miss F. was referred to us, suffering from deafness due to syphilis. We treated her for about three months. Her general health im-

proved. She claimed that she could hear a little better but we could not notice any difference.

On July 16th, 1896, we treated a Mrs. Q., suffering from pulmonary tuberculosis. She took daily treatments of one hour each for two months when she left the city, and I am informed by my sister-in-law, who visited her at her home in New York, that she entirely recovered.

On July 16th, 1896, we treated a Mrs. H., suffering from pulmonary tuberculosis. She was treated with the x-ray for about four months, daily treatments being given of one hour each, and was discharged cured. I examined her thirty days ago and found her perfectly well.

On July 27th, 1896, we treated a Mrs. C., suffering from tuberculosis of the bowels. She was treated for about three months, daily treatments being given of one hour each, after which she went south, and on her return, which was about a year afterwards, we followed up the treatment for several months. Her physician informed me the other day that she is still alive and enjoying reasonable health.

On July 29th, 1896, we treated a Mr. C. B. C. with the x-ray for diabetes. He was treated daily for one hour for about three months, and his health was greatly improved. I met him on the street the other day and he said that he was enjoying reasonably fair health.

On August 3rd, 1896, we treated a Mr. K. with the x-ray for locomotor ataxia. He continued the treatment for two months and over, and certainly improved. While he could not get around as rapidly as he would like, yet the disease, as far as progress is concerned, had been checked. He is now enjoying fair health.

On August 4th, 1896, a Mrs. L., suffering from arthritis deformans, was under our treatment for about two months. After the expiration of the treatment she was very much improved. The x-ray seemed to relieve the pain.

On August 28th, 1896, we treated a Mr. D., suffering from general neuritis. The improvement in his case was marked.

On August 26th, 1896, we treated a Mrs. J., who had been a patient of one of the best known surgeons in Chicago. He had operated on her for tuberculosis of the glands on one side of the neck excising them all. Finally the other side became involved, she not wishing to go thru another operation, as she was operated on twice before, came to us for treatment. This surgeon hearing of it became displeased and immediately condemned the treatment, telling her that no one but a quack would recommend it. He said that the ray had no therapeutic value, and finally persuaded her to discontinue the treatments, he agreeing to operate on her without further charge. The ray had a remarkable effect on the glands which were decreasing rapidly. Treatment lasted an hour daily. Now, this same surgeon is one of the x-ray's strongest advocates.

On September 10th, 1896, a Mr. Will C., suffering from pulmonary tuberculosis, was brot to our laboratory on a stretcher. He was too weak to walk being in the last stages of the disease. We treated him for about thirty days. He went home and died a month later. The ray had a decided effect on the temperature, pulse and respiration.

On September 16th, Mrs. W. W. was referred to me for treatment, suffering from pulmonary tuberculosis. She was in the last stage of the disease. We gave her daily treatments of an hour each until December 24th. At this time she took a severe cold, and had an attack of pneumonia from which she partially recovered, but died on February 19th, 1897. The immediate cause of her death was an ulcerative proctitis supposed to be tubercular.

On September 18th, 1896, we treated a Miss F., suffering from pulmonary tu-

berculosis. Having been a vegetarian, she refused to eat meat and living on a few nuts and a few grapes, which constituted her daily diet, she starved to death. In this case the x-ray acted as a powerful stimulant.

On September 26th, 1896, we treated a Dr. B., suffering from pulmonary tuberculosis. We treated him off and on for about three months after which he improved very much. He, however, sold out his practice and went to California and from thence to Denver. The doctor is now enjoying good health.

On October 5th, 1896, we treated a Mrs. S., suffering from pulmonary tuberculosis. She improved under our treatment, and I understand she is living today and enjoying reasonably good health.

On October 20th, 1896, we treated a Mr. B., suffering from asthma and chronic bronchitis. He was treated with the x-ray for three months and was very much benefited. He is now enjoying good health. The effect of the ray on asthma was quite marked in this and other cases treated by us in June of 1896. His breathing was rendered easier.

On October 21, 1896, we treated a Mrs. B., referred to us by Dr. Finley Ellingwood, suffering from tuberculosis of the kidney. She was under our treatment for about thirty days after which she discontinued for the reason that she, after each treatment, had a hemorrhage from the kidney. Dr. Ellingwood has lately informed me that three months after the treatment was discontinued she was from all appearances well, and is so today. The discharge from the kidney was analyzed at the Columbus Laboratory and they found, as well as Dr. Ellingwood, the bacilli of tuberculosis, which corroborated his diagnosis.

This case was reported by Dr. J. E. Gilman in the Clinique, January, 1901, and by myself in a paper read before the

Roentgen Ray Society at the meeting held in Buffalo, September, 1901, and published in *THE AMERICAN X-RAY JOURNAL*, April, 1902.

On November 16th, 1896, I treated a Miss W., suffering from pulmonary tuberculosis. She was under our treatment for about three months after which we discharged her cured. She is alive today and in excellent health.

On November 21, 1896, we treated a Mr. A., suffering from pulmonary tuberculosis. He was referred to us by Dr. Norman Bridge. He was under our treatment for about thirty days. He seemed to improve, owing to the cold weather he was unable to come to our office, and finally succumbed to the disease.

All of the above cases are typical cases which were treated during the year of 1896 with the x-ray. To the above list we add four more cases which were reported in the *Chicago Medical Times* of December, 1896. A case of sciatica. A case of emotional melancholia, spinal tenderness due to periostitis. The other case was articular rheumatism. There is nothing that will relieve articular rheumatism any quicker than the x-ray.

The following names were proposed for membership and duly elected: Joseph R. Hawley, M. D., John A. Whipple, M. D., and W. R. Schussler, M. D.

The society, on motion, adjourned.

A. W. SMITH, M. D.,
Secretary pro tem.

The next meeting of the society will be held on Monday evening, April 27th, 1903, on the 17th floor (drill hall parlor), Masonic Temple. An excellent program has been prepared.

Gangrene Following Operation on X-Ray Cases.—Dr. Samuel Lloyd (Medical Record, April 4, 1903), reports that he had seen two cases of epithelioma in which the proliferation had gone on very much more rapidly since beginning the x-ray treatment, altho the latter had been thoroughly carried out by experts. He had recently operated upon two cases that had been subjected to x-ray treatment for a considerable time. In one there had been no x-ray treatment for some weeks prior to operation; in the other case the x-ray treatment had been continued up to the time of operation. In the latter case, altho the parts were brot together without tension, a gangrenous patch developed, and nearly covered the whole area that had been exposed to the x-ray. At the time he had not attached very much importance to this, believing that it was due to some fault in the technique, but when he had subsequently observed a second case of the kind he had been led to ponder over the significance of the observation. The case was one of carcinoma of the breast, and while he obtained easily an abundant flap there developed subsequently a gangrenous patch covering the whole side of the chest. He was inclined to think that in both instances the x-ray had produced an unfavorable change in the nutrition of the tissues. If further experience proved this to be true, it would suggest the advisability of avoiding x-ray treatment until after operation.

Electric Shock Fatality.—The *Review of the River Plate* records that about the middle of January a youth in charge of the switchboard at the Buenos Ayres market was killed as the result of a shock. The current, it is said, was low pressure. —*London Electrical Review*, February 20, 1903.

Editorial.

Special Notice.

All physicians wishing to join the American Electro-Medical Society as a charter member should send their names, with \$3.00 accompanying, immediately to Dr. H. Preston Pratt, Masonic Temple, Chicago, Ill., who is chairman of the executive committee. The constitution and by-laws of the society were printed in the February issue of this journal.

At the meeting of the Chicago Medical Society on April 11th, 1903, the evening was devoted to a Symposium on Radiography.

The first on the program was the Physics of the X-Ray, by Dr. L. C. Pardee. Second, The Finsen Light, by Dr. F. H. Montgomery. Third, The X-Rays, by Dr. W. A. Pusey. They all did themselves proud, as their papers were excellent. The subject was ably discussed by Drs. J. R. Pennington, G. G. Burdick, R. V. Wagner and others.

The editor has just received a communication from Dr. Heber Robarts, the former editor of this journal, in which he states that he has been in the hospital for several weeks, having had an operation for gall stones. He is now doing well, having been relieved of about 300 of them.

The May Century will offer, apropos of the Emerson centenary, a full-page wood cut, engraved by Timothy Cole, of Ralph Waldo Emerson, and editorial discussion of "Our Inheritance in Emerson." The block from which the page is printed is an example of the great wood engraver's earlier work, and the print is a reproduction of what is generally considered one of the most satisfying photographs of Emerson in existence.

American Medical Association Meeting.

—For the occasion of the meeting of the American Medical Association, at New Orleans, May 5 to 8, 1903, the Mobile and Ohio Railway will make a rate of one first class fare for the round trip, viz., \$18.00 from St. Louis, \$23.00 from Chicago. Tickets will be sold May 1 to 4, inclusive, limit 10 days, with privilege of extension to May 30th, on payment of fifty cents. Write John M. Beall, A. G. P. A., St. Louis, for full particulars.

The Action of the Static Current on the Atmosphere.

While treating patients with the static machine for various chronic and nervous affections Dr. Albert C. Geyser of New York city noticed that some of them were at the same time relieved of acute troubles of the throat and lungs. In searching for the cause of these unexpected cures he noticed rapid disappearance of the particles of dust in the room, usually visible in a sunbeam, as soon as the static machine was started. By means of culture plates placed in various parts of the room, (1) before the machine was started, (2) after it had been in action for a short time, (3) some time after the machine had stopped, other conditions being maintained as nearly as possible the same throughout the experiment, he showed that the number of bacteria and molds in the atmosphere while the static machine was in action was 80 per cent less than before the machine was started, and after the machine had stopped the number remained less than 50 per cent for a considerable time. The action of the machine causes the germ-bearing particles of dust to land upon the walls and floor or any object that may be in the room.

Dr. Geyser's investigation is certainly ingenious and, so far as we know, new. While the removal of bacteria from the atmosphere by the action of the machine can hardly be considered a prominent factor in the cures referred to, it is undoubtedly of importance as a preventative of throat and lung troubles in susceptible patients. It is also of some importance to note that dust particles carrying bacteria may be projected from an electrode of the static machine. The factor considered by Dr. Geyser as having equal or greater prominence in the cures is the presence of ozone, which is manufactured in large quantities by the action of a static machine, so much so as to completely surround and be inhaled by the patient and which acts as an antiseptic upon the throat and lungs.

A Conference on X-Ray Therapy will be one of the features of the Section of Neurology and Electro-Therapeutics at the Boston meeting of the A. I. H. It is hoped that physicians using the x-rays for the treatment of cancer, etc., will be prepared to give in from three to five minutes each the salient features of their methods and the lessons they have learned from their work. X-Ray therapy is still in a formative stage, and it is believed that this interchange of ideas and experiences will be of benefit to those interested in it. Physicians engaged in this work who look forward to being at Boston are asked to send a postal card to the Chairman of the Conference, Dr. Hills Cole, Hartford, Conn.—*Cleveland Medical and Surgical Reporter*, March, 1903.

X-Rays in the Spectrum—Lord Rayleigh, professor of natural philosophy at the British Royal Institution, has announced that M. Blondelot, a skilful French experimenter, very recently adduced evidence going far to prove that the Röntgen rays are susceptible of polarization, if they have not been polarized already, and can therefore be traced in the spectrum. If this is true and the rays are transversal, as M. Blondelot thinks, it follows that they are a species of ordinary light, but of extremely short wave lengths, perhaps a hundred times shorter than the waves of the light that one can see. Lord Rayleigh said he saw no reason to question the discovery, which is of first-rate importance in helping to determine the nature of the Röntgen rays, which has been in doubt ever since they were discovered.—*New York Sun. Medical Record* March 28, 1903.

Electrolytic Superoxides—HOLLAND—(*Comptes Rendus*, January 26, abstracted in *Lond. Elec.*, February 20), gives an account of a chemical investigation of the lead peroxide deposited at the anode of a solution of a lead salt. The present author has found that the weight is too great for the peroxide and that higher oxides are deposited; the proportion of these higher oxides is greater the smaller the concentration of the lead in solution. It is probable that very high oxides are formed, but the author has not determined their exact nature. Lead is not the only metal which shows this phenomenon; an alkaline solution of nickel pyrophosphate yields a similar oxide, as does also a solution of sulphate of bismuth containing a little nitric acid and copper sulphate. These have been obtained only in dilute solutions, as the salts are rather insoluble.—*Electrical World and Engineer*, March 14, 1903.

"Electro-Therapeutics and Quackery."

A. D. Rockwell, M. D., (Medical Record, March 7, 1903) writes in reply to the Editor:

"With the spirit of your editorial note on this subject in the issue of February 28, I am in full accord. If, however, by quacks are meant men who are in no way reputably affiliated with the medical profession—then the statement of Mr. Edmund Owen before the British Electrotherapeutic Society—that the medical use of electricity has fallen largely into the hands of quacks, is quite erroneous. This could truthfully have been said twenty-five years ago, but not now. Quacks of this kind are quite as effectually driven from the field as are the advertising oculists, aurists and throat specialists, Electricity, as has been well said, 'has been wounded in the home of its friends.' In the same way as the x-rays, valuable as they are, have been made to stand for more than they have yet accomplished, so the various electric modalities, and especially static electricity have been lauded too much as cure-alls to satisfy rational medical conservatism.

You very properly dwell upon the significance of the fact that there are 'hordes of users of this method whose voicings betray their ignorance of even the elements of electrophysics.' It is this class, undoubtedly, that is in the main, but not altogether, responsible for the unfavorable judgment of the profession at large. I can hardly agree, however, with the editorial statement that there are 'scarcely a handful of reputable authorities in the world to-day who have any faith in, or knowledge of, the therapeutics of the static form of electrical manifestation.' There are hundreds of reputable and able men both here and abroad who fully recognize the influence of the various methods of electrization over general and local nutrition. As to those who have 'no knowledge of electrical manifestations

and so have no faith,' it can only be said, so much the worse for them. If they possessed more knowledge they would have more faith.

How often is heard the remark from a medical standpoint, 'I do not believe in electricity.' Could anything be more senseless? One might as well say, I do not believe in heat or cold, or in any of 'the marvelous manifestations of universal force, upon which life and physical well-being depend. It is gratifying to know that the reproach of Mr. Lecky 'that the medical powers of electricity which of all known agencies bears most resemblance to life, are unexplored,' is no longer deserved; and if, in these explorations, there is developed with what is substantial and worthy, too much that is chaff and worthless, it is only another illustration of that dominant commercialism which, while it may abstract, cannot prevent scientific advancement or professional recognition."

Seventy-five Cases of Malignant Tumors.

W. B. Coley, M. D., (Medical Record, March 21, 1903) reports seventy-five cases of malignant tumors treated.

In an introductory paragraph he mentions Dr. Gilman, of Chicago, as among the pioneers in advocating the x-ray in the more deeply seated forms of cancer. Candor demands that this statement be qualified by the fact that all Dr. Gilman's early cases were treated in the laboratory of Dr. H. P. Pratt. The statement on the same authority (Gilman) that cancer is as curable under x-ray as is typhoid fever in ordinary practice, is calculated, in our opinion, to bring the method into disrepute.

We condense Dr. Cooley's report. Case (1) Round-celled sarcoma of the neck. Case considered hopeless. Marked improvement under x-rays; recurrence; x-rays again; steady improvement and

general health good. (2) Round-celled sarcoma of femur. Examination showed a large tumor, of left femur from the condyles to the junction of the middle and upper third; under x-ray treatment it steadily diminished in size, and after ten months the left leg measured the same as the right. Examination of tissues showed no sarcoma. Metastasis, tumor in pectoral region removed Feb. 4, 1903. It proved to be a typical round-celled sarcoma. (3) Sarcoma of parotid. No improvement under x-ray and mixed toxins. (4) Small round-celled sarcoma of the pectoral region. Twice operated upon but complete removal impossible. Mixed treatment with x-ray and toxins; tumor almost entirely disappeared. (5) Small round-celled sarcoma of the back. Excised twice. After five months' treatment with x-rays tumor had entirely disappeared. Recurrence; did not improve under x-ray. Excision January 20, 1903. (6) Sarcoma of the frontal sinus. Combined treatment; slowly improving. (7) Recurrent sarcoma of testicle. Retroperitoneal tumor the size of a man's head, with metastatic tumors of the back. Combined treatment. Unimproved. (8) Recurrent round-celled sarcoma of testis. Combined treatment; slight improvement; very foul discharge nearly ceased; recovery doubtful. (9) Sarcoma of neck. Recurrent. X-ray treatment. Little effect so far. (10) Sarcoma of right pectoral region and neck. X-ray treatment. No appreciable change. (11) Very large inoperable lymphosarcoma of the neck. X-Ray treatment with no effect on the growth; regarded as hopeless. (12) Sarcoma of neck. After excision x-ray treatment four times a week for three months; discharged apparently cured. (13) Melanotic sarcoma of the iliac glands. Four operations for recurrent growths. X-Ray for nine months; growths held in check without decrease in size; has gained fifteen pounds in weight. (14) Spindle-

celled sarcoma of the cheek and back. Combined treatments. After ten months' treatment tumor diminished considerably in size; toxins discontinued; x-ray alone; growth increased rapidly; resumed combined treatment January 12, 1903, tumor decreasing in size, but patient is losing flesh rapidly and shows signs of internal metastasis. (15) Spindle-celled sarcoma of superior maxilla. Three operations; toxins; improvement at first; later none; x-ray; no effect on pain or growth of tumor. (16) Sarcoma of thigh. Enormous swelling of thigh. X-Ray fifteen weeks; tumor greatly diminished in size. With disappearance of tumor general health failed; died ten weeks later. (17) Recurrent spindle-celled sarcoma of chest wall. Six x-ray treatments as prophylactic; no recurrence. (18) Small round-celled sarcoma of thigh. Recurrence after three operations. Combined treatment for three or four months; growth retarded at first, but later no improvement; metastasis to lung. (19) Round-celled sarcoma of thigh; combined treatment for a month; no effect. (20) Round-celled sarcoma of parotid. Combined treatment; no improvement; died. (21) Sarcoma of neck. X-Ray treatment too short to note result. (22) Sarcoma of the parotid. X-ray four weeks; no improvement. (23) Recurrent sarcoma of orbit. Combined treatment three months; at first, growth held in check; later no effect. (24) Intra-abdominal sarcoma. Retroperitoneal. Involvement of right kidney. X-ray six weeks. Slight improvement at first, later no effect. (25) Sarcoma of right superior maxilla. X-ray had very little effect. (26) Sarcoma of axilla; excision; recurrence; x-ray treatment seventeen weeks; recurrence; x-ray; recovery. Afterwards developed tuberculosis of lymphatic glands. A case of advanced Hodgkin's disease under x-ray showed remarkable improvement. Two cases of Hodgkin's disease treated by

Williams relapsed after six months. Twenty-one cases of cancer of the breast were treated. Fourteen recurrent and inoperable. One case carcinoma under x-ray showed slight improvement. Four cases; x-ray immediately after operation as prophylactic; recurrence, with much pain. One of these showed improvement under treatment carried to dermatitis. One case recurrent cancer of the breast; radical operation; x-ray, thirty exposures; now no trace of disease. Third case, carcinoma of breast; excision; x-ray, twenty-five exposures; no trace of a return. Fourth case, carcinoma of both breasts, axilla involved; excision; x-ray immediately after the wound healed; no recurrence; now appears well. Three cases recurrent carcinoma of breast, tumors disappeared after three or four weeks' x-ray treatments. Another case the tumor disappeared under the x-ray but the lung became involved and patient died. Most of the other cases were large recurrent masses in the breast and axilla; most of them showed slight improvement, but in none did the growth entirely disappear. There were fifteen cases of epithelioma of head and face. In none of these has the growth entirely disappeared. Eleven cases of abdominal cancer were treated with the x-ray. One case of inoperable cancer of uterus showed improvement after one months' treatment. In a second case of uterine cancer the discharge ceased entirely after a few treatments and she appeared to be cured. In a case of carcinoma of the rectum there was general improvement and a gain in weight after x-ray treatments. In a case of extensive inoperable round-celled sarcoma of neck, pectoral region and axilla, the tumors disappeared under x-ray treatment with recurrence in the region of the ascending colon. Under x-ray, high tube, four exposures a week for six weeks, tumor has diminished one-half in size and on February, 1903, the tumor was still decreasing.

The author favors the treatment of inoperable sarcoma, by toxins as more certain to effect a permanent cure than by x-rays. The round-celled sarcoma requires a mixed treatment. While the spindle-celled is amenable to toxins [of erysipelas and bacillus prodigiosus.]

The 1903 Standard Medical Directory.

The new volume will consist of about 1,300 pages comprising complete directories respectively of the physicians of all North America, colleges, societies, hospitals, sanitariums, mineral springs, publications and in fact everything related to medicine. The new features (including an alphabetical index of physicians, with post office addresses and rosters of practitioners of the specialties) will, it is stated, add about one-third to the volume of the work.

The Röntgen Treatment of Malignant Disease.—Leonard believes that even if recurrence does take place, the results of the treatment of malignant disease by the Röntgen ray demonstrate the efficiency of this method and that renewed treatment will free the patient from the disease. The best method of treatment seems to be the combination of early radical surgical operations and the Röntgen treatment. The best results, in the average case, are achieved through the replacing, as the result of a retrograde metamorphosis of the malignant tissue, by fibrous or adipose tissue. More rapid results, but possibly more dangerous, can be produced by the sloughing and necrosis of the pathologic tissue.—*American Medicine*. February 2, 1903.

Correspondence.

DEAR DOCTOR:

Will you explain thru your April issue of THE AMERICAN X-RAY JOURNAL the following questions: "Why do we have to use a fluoroscope in making x-ray examinations? Does the screen stop the rays? Please explain fully. Yours truly, L. D. H.

[Your question is fully answered in THE AMERICAN X-RAY JOURNAL of April, 1899, volume 4, number 4, page 553, in an article written by Dr. H. Preston Pratt, from which we partially quote the following: "Lines of force, or electrical radiations, are thrown from the Crookes tube, and with every discharge of the tube produce decomposition of all substances in the path of the x-ray. It is a well known law in chemistry that when a chemical compound is decomposed, for instance a liquid, solid, or a gas, a spark is produced, we call this light, or fluorescence. The screen fluoresces, or lights up; this is why, in looking at a screen, the screen is lighted up by the x-ray due to the electro-chemical changes which take place, reducing the chemical on the screen into similar compounds, or converting the bromide of silver on the photographic plate into the oxid of silver. The amount of conversion depends upon the strength of the current, that in turn depends upon the resistance of the circuit. The greater the resistance of the circuit the less the change. The less the resistance of the circuit the greater the change. When we interpose between the screen or the photographic plate, the hand or any part of the human body, what we see is not the picture of the bones, but a shadow due to the difference of the resistance of the x-ray circuit as determined by electro-chemical decomposition. Bones affording greater resistance to the circuit than the flesh. The decomposition is less and hence the shadow. This follows Ohm's law. The cur-

rent is equal to the electro-motive force divided by the resistance."—Ed.]

EDITOR X-RAY JOURNAL:

Does the shaft of a static machine have to be insulated from the revolving plates to prevent leakage of electricity from the machine? W. C.

[Yes, the shaft acting as a conductor as well as a condenser is liable to short circuit the plates, thereby cutting down the capacity of the machine.—Ed.]

EDITOR X-RAY JOURNAL:

I have a patient (female) who has convulsive tic of facial nerve. The attack came on about one year ago and she is about fifty years of age. The menopause ceased several years previously. No assignable reflex cause. What would you suggest from an electro-therapeutic standpoint and what would be your prognosis? May I kindly ask for a reply thru the JOURNAL. Yours very truly, J. G.

[In the above case I would suggest the use of the x-ray alternating with the hyperstatic current. Prognosis would be favorable.—Ed.]

TO THE EDITOR:

I have noticed for several months the advertisement in your journal of the Seed Co.'s positive films for use in x-ray work. As I have been using the sun prints, and it is sometimes several days before the sun shines, which delays me very much, would you advise the use of the positive films? Kindly answer in the next issue of the JOURNAL. E. F. C.

[Yes, use the Seed positive films by all means, as it will save a good deal of time, even if you wish later to make a sun print. There are a good many x-ray workers who are using the films exclusively, and only make a sun print when they are requested to do so. After you are accustomed to them you will be well pleased.—Ed.]

DEAR DOCTOR:

I am much pleased with THE AMERICAN X-RAY JOURNAL. Your correspondence department is very helpful. There are some points on which I wish information, and hope you will answer through the JOURNAL, as I have no doubt the queries and answers will be of interest to other users of static machines.

I have written Mr. ——— for information on these points and have gotten brief and unsatisfactory replies.

I have a 16-plate Electro-Med. static machine, plates 30x33 inches. On account of not knowing how the revolving plates were kept from revolving on the main shaft, I have gotten a lot of very expensive experience.

The soft rubber washer between the brass jamb-nut and the front revolving plate became disintegrated by the action of ozone and the revolving plates turned on the axle, or, in other words, the axle turned without turning the plates. I did not know that rubber had been used to support the plates and made a paste of Lepage's glue and plaster paris, applied it on the inside of the jamb-nut, and screwed it up. This temporarily stopped the trouble. When it began again from the operation of the same cause, on the other washers, I undertook to unscrew the jamb-nut and the union between the plate and the cement was so firm that I broke the plate. I then tried getting the plates out and broke or cracked several more. I have, at last, learned how to take the plates out and replace them. There is, however, some danger of cracking or breaking a plate, even after you understand the mechanism.

The shellac varnish has peeled off of some of the plates, leaving them partly bare. Is it essential to the working of the machine to have them varnished? As I have the machine together now, there is a crack in the front revolving plate extending from the center for about 6 or 7 inches, and there is a crack in the front stationary plate from the center to the circumference.

Does a crack interfere with the work of the machine, or the generation of the current? I can understand how that the crack weakens the revolving plate and how there might be danger to the machine when plates are revolving rapidly, but as there is no strain on the stationery plate, I do not see how that could interfere. Very truly yours, J. T. M.

[You had an unfortunate experience. It is always a wise thing to study the

mechanism of your machine before taking it apart. Even after you understand it you are liable to have trouble. It is essential to the working of the static machine to have the plates varnished to prevent the accumulation of moisture. A crack in the plate decreases the possible energy obtainable from the plate thru a short circuit or partial polarization depending entirely upon the relationship of the plate to adjacent parts. A plate cracked into two pieces would be the same as two separate plates, and it all depends upon the location of the crack to the tin foil on the surface of the plate as to how much available energy is being lost. In both instances energy is lost. We must not lose sight of the fact that the principal of the dynamo and the static machine is the same. The revolving plates stand in the same relation to the stationary plate as an armature does to a field magnet, and consequently would be subject to the same governing law.—Ed.]

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